

Appendix B

Bath Chemistry Data

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Table B-1. Bath Concentrations for the HASL Technology

Bath	Chemicals	Concentration in Bath (g/l)
Cleaner	Alkylphenolpolyethoxyethanol	18.00
	Ethylene glycol monobutyl ether	22.90
	Fluoboric acid	12.33
	Phosphoric acid	61.11
	Sulfuric acid	110.40
	*9 other confidential chemicals	
Microetch	1,4-Butenediol	12.72
	Copper sulfate pentahydrate	45.00
	Hydrogen peroxide	50.73
	Sodium hydroxide	0.170
	Sulfuric acid	103.50
	*7 other confidential chemicals	

Table B-2. Bath Concentrations for the Electroless Nickel/Immersion Gold Technology

Bath	Chemicals	Concentration in Bath (g/l)
Cleaner	Phosphoric acid	50.8
	Sulfuric acid	138
	Hydrochloric acid	17.85
	Alkylphenolpolyethoxyethanol	18.00
	*Two other confidential chemicals	
Microetch	Sodium hydroxide	0.170
	Hydrogen peroxide	35.88
	Copper sulfate pentahydrate	45.00
	Sulfuric acid	87.40
	*Two other confidential chemicals	
Catalyst	Hydrochloric acid	55.80
	*Four other confidential chemicals	
Acid Dip	*Two confidential chemicals	
Electroless Nickel	Nickel sulfate *13 other confidential chemicals	37.24
Immersion Gold	Potassium gold cyanide *Four other confidential chemicals	2.999

Table B-3. Bath Concentrations for the Electroless Nickel/Electroless Palladium/Immersion Gold Technology

Bath	Chemical	Concentration in Bath (g/l)
Cleaner	Phosphoric acid *2 other confidential chemicals	50.80
Microetch	Sodium hydroxide Hydrogen peroxide Copper sulfate pentahydrate Sulfuric acid *1 other confidential chemical	0.17 35.88 45.00 156.40
Catalyst	*4 confidential chemicals	
Acid Dip	*1 confidential chemical	
Electroless Nickel	Nickel sulfate *10 other confidential chemicals	58.65
Preinitiator	*4 confidential chemicals	
Electroless Palladium	Ethylenediamine Propionic acid Maleic acid *6 other confidential chemicals	4.45 7.30 2.00
Immersion Gold	Potassium gold cyanide *4 other confidential chemicals	3.00

Table B-4. Bath Concentrations for the OSP Technology

Bath	Chemical	Concentration in Bath (g/l)
Cleaner	Phosphoric acid Sulfuric acid *3 other confidential chemicals	50.80 9.20
Microetch	Sodium hydroxide Hydrogen peroxide Copper sulfate pentahydrate Sulfuric acid *6 other confidential chemicals	0.170 18.165 45.00 250.70
OSP	Copper ion *5 other confidential chemicals	50.50

Table B-5. Bath Concentrations for the Immersion Silver Technology

Bath	Chemical	Concentration in Bath (g/l)
Cleaner	Phosphoric acid	122.90
Microetch	1,4-Butenediol Sulfuric acid Hydrogen peroxide	12.72 4.60 113.00
Predip	Sodium hydroxide *4 other confidential chemicals	29.36
Immersion Silver	Sodium hydroxide *5 other confidential chemicals	26.43

Table B-6. Bath Concentrations for the Immersion Tin Technology

Bath	Chemical	Concentration in Bath (g/l)
Cleaner	Ethylene glycol monobutyl ether Fluoboric acid Sulfuric acid Phosphoric acid *6 other confidential chemicals	22.90 12.33 184.00 30.25
Microetch	Sulfuric acid *1 other confidential chemical	18.40
Predip	Methane sulfonic acid Sulfuric acid *10 other confidential chemicals	337.50 0.0092
Immersion Tin	Sulfuric acid Urea 1,3-Diethylthiourea Tin chloride Methane sulfonic acid Stannous methane sulfonic acid *14 other confidential chemicals	92.18 90.00 20.00 13.98 69.17 111.80